

me that they were not Great Frigatebirds *F. minor*, the most likely possibility, but probably Lesser Frigatebirds *F. ariel*. I briefly considered *F. andrewsi* but dismissed it as being highly improbable on the grounds of distribution. Other species were considered even more improbable on distribution grounds. After receiving a copy of Harrison (1983) my interest was revitalised. However, since I was still unable to reach any firm conclusion, the slides were sent to Peter Harrison who identified them as being without any doubt immature *F. andrewsi*.

The only known breeding colony is on Christmas Island, northeast Indian Ocean, where there are fewer than 2000 pairs. It disperses to the coasts of Java, Sumatra, northwest Borneo, to the Andaman Sea and Gulf of Siam (Harrison 1983). It is also known from Sabah (Smythies 1981), Brunei and Bali (pers. obs.). The only previous record away from this area is one near Darwin, Australia (Harrison 1983). The present record, which is over 6000 km west of any previous off season records, either shows that the immatures of this species, at least, are greater wanderers than was previously thought, or suggests the possibility of a small, unknown colony somewhere in the western Indian Ocean. Photographs taken from these slides will be deposited at the National Museum, Nairobi, Kenya. Anyone wishing to discuss the identification in detail may contact me at the address below.

*Acknowledgements:* I would like to express my gratitude to Peter Harrison who kindly identified the slides and provided me with an explanation for his decision. Also to the staff of the Sub-department of Ornithology, British Museum (Natural History) for access to the collections.

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## The erectile crest and other head feathering in the genus *Picathartes*

by Hilary Tye

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The 2 species of *Picathartes* have various common names, including 'bald crow', 'bare-headed rock-fowl' and 'picatharte chauve'. However, both species have 2 types of modified feather on their heads: there are well-defined areas of short bristles and also an erectile crest of simple feathers. The positions of the crest and bristles are different in the 2 species, associated with the differing pattern of black and coloured bare skin (Fig. 1). There has been no thorough examination of head feathering in either *Picathartes* species although the erectile crest has been briefly described by Flieg (1971) for *P. gymnocephalus* and the presence of these feathers noted in both species (Serle 1952, Carpentier 1964, McKelvey 1981).

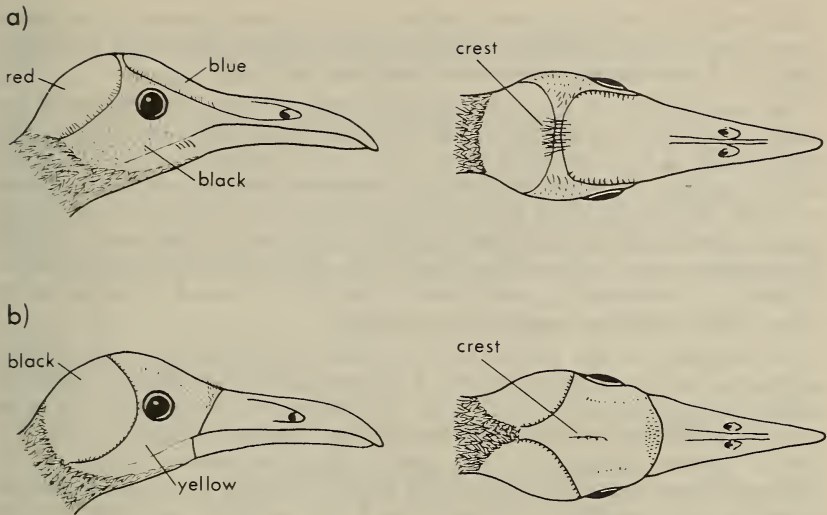


Figure 1. The pattern of skin colouration and distribution of head feathering for (a) *Picathartes oreas* and (b) *P. gymnocephalus*. Left, side view. Right, view from above. Bristles are shown as stipples or short individual lines.

Museum skins of 10 *P. oreas* and 12 *P. gymnocephalus* and 2 and 4 specimens respectively in formalin of each species were examined in this study. The latter specimens had probably been subject to less post-mortem wear; their head feathers were generally longer and more intact and were assumed to be most like fresh feathers of living birds.

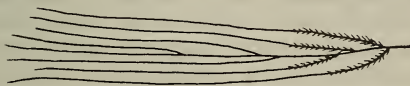


Figure 2. Typical feather from the erectile crest of both *Picathartes* spp.

### Erectile crest

The feathers forming the erectile crest of *P. gymnocephalus* were called filoplumes by Flieg (1971), but close examination shows otherwise. Filoplumes have either no vane or a small one at the tip (Van Tyne & Berger 1959), whereas the crest feathers in both species of *Picathartes* have barbs along the whole length, the proximal ones, at least, bearing small barbules (Fig. 2). Filoplumes are always found beside other feathers (Van Tyne & Berger 1959) but *Picathartes* crest feathers are completely isolated from any others, in individual follicles. Filoplumes do not possess muscles (Stettenheim 1974), whereas the crest feathers of both *Picathartes* species evidently do, as they can be erected. The crest feathers are intermediate in form between contour feathers and down, being more structured than down; they fit definitions of a semiplume in that the longest barb is shorter than the shaft (Stettenheim 1972) and they have a definite rachis but no hamuli and therefore no firm vane (Van Tyne & Berger 1959). The crest feathers are only slightly simpler in form than the contour feathers on the neck, at the edge of the bare skin. These also have a loose structure, like many contour feathers of both *Picathartes* species.

The erectile crest of *P. oreas* consists of a staggered transverse row about 7 mm long of up to 9 feathers, rooted at the rear of the blue skin of the crown (Fig. 1a). These feathers are about 8 mm long and black.

The erectile crest of *P. gymnocephalus* is situated along the midline of the crown, between the eyes (Fig. 1b) and comprises a straight row, about 6 mm long, usually of 3 (see also McKelvey 1981), but occasionally 4, feathers. Flieg (1971) reported 3-5 'filoplumes', but it seems that he did not examine birds in the hand, merely "at close quarters", and also described them as being in 2 groups, whereas in the specimens I examined they seem to be evenly spaced. These feathers are 6-8 mm long and on museum specimens appear straw-coloured or, occasionally, partly black. Flieg (1971) records their colour as white, which they may appear from a distance.

The feathers on the crown of both species of *Picathartes* normally lie backwards, but can be erected at will. A *P. oreas* captured on Mount Cameroon raised its crest while in the hand (C. G. R. Bowden) and one *P. oreas* in a large aviary at Frankfurt Zoo did this when another approached within 1-2 m (A. Tye). *P. gymnocephalus* can also elevate the crest feathers (Flieg 1971). Although these feathers are only visible at close quarters, they may be used for signalling to conspecifics, rather than being vestigial, as Flieg (1971) suggested.

### Bristles

The bristles on the areas of bare skin in both species of *Picathartes* are small but conform with the usual definitions of this modified type of feather (e.g. Stettenheim 1972). Much of the black area of skin around the eyes of *P. oreas* is covered with black bristles 1-2 mm long and about 1 mm apart. The borders of the black and coloured skin are also fringed with longer bristles 2-4 mm long at intervals of 1 mm or less (Fig. 1a). There are also a few bristles at the base of the lower mandible (Fig. 1a). The bristles are often longest in nestlings and after moult, probably due to lack of wear. The bare skin of the head is often not brightly coloured at fledging (Tye in prep.) and one *P. oreas* nestling I observed on Mount Cameroon in December 1983 had a blackish head which, combined with long fringing bristles, made its head appear feathered in profile.

In *P. gymnocephalus* the black areas of skin have no bristles visible under 10 x magnification. These areas do however have a fringe of bristles 1-2 mm long and there is a line of similar bristles above the eye (Fig. 1b). There are also bristles, up to 3 mm long, in a small patch on the yellow skin at the base of the upper mandible (Fig. 1b).

In other birds, bristles are most common around the eyes and base of the bill (Stettenheim 1972). Possible functions include protection of ears, nostrils and eyes from insects and foreign particles and to display brightly coloured skin while retaining some protection (Stettenheim 1974). Although the bristles of both *Picathartes* species are very short they may offer some protection, particularly as *P. gymnocephalus*, and probably *P. oreas*, forage at ant swarms (Walker 1939, Willis 1983).

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## Pesticidal mortality of Crimson-breasted Barbet *Megalaima haemacephala* with a note on its body size

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Chemical pesticides efficiently control obnoxious animals and thus are extensively used throughout the world; but many cases of direct and indirect mortality of non-target animals are known. This communication reports accidental mortality of Crimson-breasted Barbets *Megalaima haemacephala* following infusion of an organophosphorus insecticide monocrotophos (= Nuvacron SC 40) into Cluster Fig *Ficus glomerata* trees for insect control. The Crimson-breasted Barbet is found throughout India and as far south and east as the Philippines and Indonesia (Ali & Ripley 1970). It is almost exclusively frugivorous, preferring mainly the fruits of *Ficus* spp. *F. glomerata* produces big fruits c. 2.5-3.75 cm in diameter (Brandis 1921) which are relished by barbets and other birds as well as consumed by human beings.

Accidental poisoning of birds due to monocrotophos is not new. This insecticide was involved in mass mortality of birds like pipits, wagtails, larks, thrushes, Chaffinches, buntings, lapwings etc. following aerial sprays on alfalfa crop fields to control the Levant Vole *Microtus guentheri* in Israel. In addition, as many as 400 raptors, owls and kites also died after feeding on poisoned voles and birds in an area of 8 km<sup>2</sup> within 3 months (Mendelssohn & Paz 1977). Recently, poisoning of about 100 birds, mostly ducks and geese, has occurred in western Louisiana (USA) as a result of monocrotophos application to rice fields (White *et al.* 1983). Since the insecticide is so highly toxic to birds (Walker 1983), it has been used, along with dicrotophos, as poison bait on rice seed for the deliberate killing of birds around rice fields in Texas (USA) (Flickinger *et al.* 1984). However, there is no previous report of mortality of frugivorous birds due to this chemical. We present here a case which shows that monocrotophos can cause mass mortality of frugivorous birds if infused into fruit trees. Taking the opportunity this mortality presented, we have also analysed the morphometrics of Crimson-breasted Barbets.